

Air Insufflation of the Stomach Following Laparoscopic Pyloromyotomy May Not Detect Perforation

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ABSTRACT

Background: Undetected perforation during laparoscopic pyloromyotomy can be fatal. Detecting a perforation at the time of laparoscopic pyloromyotomy is difficult. The purpose of this study was to determine whether air insufflation of the stomach reliably detects perforation during laparoscopic pyloromyotomy.

Case Reports: Between 2007 and 2008, 71 patients underwent laparoscopic pyloromyotomy and 2 patients (3.3%) had perforation. Insufflating the stomach with air did not demonstrate the perforation in either case. Both perforations were detected by careful inspection of the myotomy; a small amount of mucus was seen at the perforation site. Both patients underwent open suture repair with an omental patch and had unremarkable post-operative courses.

Conclusions: Air insufflation of the stomach during laparoscopic pyloromyotomy does not reliably rule out perforation. As with all procedures with potential complications, a high index of suspicion and careful inspection of the entire myotomy may help detect perforation.

Key Words: Laparoscopic pyloromyotomy, Gastric perforation, Pediatric laparoscopy, Complications.

INTRODUCTION

Laparoscopic pyloromyotomy was first introduced in 1991.¹ Over the last decade, laparoscopic pyloromyotomy has gained increasing popularity and has been shown to be safe and effective.²⁻⁵ However, some surgeons continue to perform open pyloromyotomy due to concerns over an undetected perforation and its associated morbidity and even mortality. Currently, the most common method to detect a perforation is by insufflating air into the stomach and checking for bubbles at the myotomy site.²⁻⁵ We report on 2 patients in whom air insufflation into the stomach did not detect a perforation during laparoscopic pyloromyotomy.

CASE REPORT

Between January 2007 and December 2008, 71 patients underwent laparoscopic pyloromyotomy by a single surgeon. During this time, 2 patients experienced perforation. The first patient was a 5-week-old, 3.2kg, male infant and the second was a 4-week-old 3.3kg, male infant. Briefly, laparoscopic pyloromyotomy was performed with a 2.7-mm, 30-degree laparoscope through the infraumbilical area. Two additional stab incisions (left upper quadrant and right upper quadrant) were made. The pylorus was stabilized, incised, and pyloromyotomy completed. Air was then insufflated into the stomach through a previously placed orogastric tube while the duodenum was occluded with a laparoscopic grasper. In all cases, the orogastric tube was an 8 French red rubber catheter. Air was insufflated using a 60-mL catheter tip syringe until the stomach was clearly distended and the myotomy site was observed for bubbles. Typically, a thin layer of blood overlies the myotomy site in which the bubbles are created.

In both cases, insufflating air into the stomach did not demonstrate the perforation. In both cases, the stomach was distended multiple times, and there was no evidence of a leak. Both leaks were detected after suctioning the overlying blood to allow close visual inspection of the myotomy site. In both instances, there was a small amount of mucus seen at the perforation site. The first perforation occurred at the gastric end of the myotomy, and the

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second occurred at the middle of the inferior aspect of the myotomy. Both patients underwent open suture repair with an omental patch. Neither required closure of the pyloromyotomy and a myotomy at another site. Both patients had unremarkable postoperative courses.

DISCUSSION

Prospective, randomized studies have shown that laparoscopic pyloromyotomy is as safe and effective as open pyloromyotomy is.²⁻⁵ However, an undetected perforation can lead to sepsis, multi-organ failure, and even death.⁶ Fear of such a complication has led some pediatric surgeons to continue to perform open pyloromyotomy. Currently, the most common method for detecting a perforation during laparoscopic pyloromyotomy is by insufflating air into the stomach while visualizing the myotomy site for any air bubbles.²⁻⁴ Despite this technique, undetected perforations have occurred and although not reported, undetected perforations have led to significant morbidity and even mortality. In this report, we have demonstrated 2 perforations in which insufflating air into the stomach did not detect a leak. As with many complications in surgery, both perforations were detected due to a high index of suspicion. In both cases, the pyloromyotomy did not go as smoothly as others; thus, in addition to air insufflation of the stomach to detect a perforation, both underwent careful inspection of the myotomy site. In nearly all instances, blood is covering the myotomy site to help detect the bubbles with during insufflation; however, this layer of blood may also obscure adequate visual inspection. As with open pyloromyotomy, it has not been our practice to remove this blood to carefully inspect the myotomy site. Based on these 2, we have now abandoned insufflating air into the stomach as a method for detecting a leak, but rather, rely on close visual inspection of the pyloromyotomy.

CONCLUSION

As minimally invasive techniques continue to develop and gain popularity, the ability to avoid and detect intraoperative complications is vital. With respect to laparoscopic pyloromyotomy, the ability to detect perforation at the time of surgery remains the most crucial aspect of the procedure. However, the current method of detecting a perforation with insufflation of air into the stomach is unreliable. Rather, a high index of suspicion and careful visualization of the entire myotomy is required.

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